

Name: \_\_\_\_\_

Chemistry

Date: \_\_\_\_\_

### How Big is a Mole?

The purpose of this lab is to practice measuring moles of different substances and to practice mole calculations. At the end of the lab you should have a better feel for how big a mole really is.

Write up the lab on a separate sheet of paper. Show all of your data for each step and your work for the calculations!

- What is the **mass** of the sample of iron at this station?
  - How many **moles** of iron are in this sample?
  - How many **atoms** of iron are in this sample?
- Measure out 45 mL of water ( $\text{H}_2\text{O}$ ).
  - How many **moles** of water is that?
  - How many **molecules** of water is that?
- What is the **mass** the sample of pyrite ( $\text{FeS}_2$ )?
  - How many **moles** of  $\text{FeS}_2$  is that?
  - How many **molecules** of  $\text{FeS}_2$  is that?
  - How many **moles of atoms** are in this sample?
- Record the mass of a penny.
  - Assuming the penny is pure copper, how many **moles** of copper are in the penny?
  - How many **atoms** of copper is that?
- Measure out exactly **0.5 moles** of sodium bicarbonate ( $\text{NaHCO}_3$ ).
  - What instrument did you use to do this measurement?
  - What is the volume of 0.5 moles of  $\text{NaHCO}_3$ ?
  - How many **molecules** of  $\text{NaHCO}_3$  is this?
- Imagine that you have  $4.15 \times 10^{23}$  atoms of gold in your hand.
  - How many moles of gold would that be?
  - What would be their combined mass?
- Imagine that the national debt of the United States is paid directly to you, in the form of a check for \$5.7 trillion.
  - How many moles of dollars is this?
  - At the rate of \$1000/second, how long in years would it take you to spend this much money?